# BRCS035N03YB

Rev.A Nov.-2023

DATA SHEET

## / Descriptions

SGIQ6Ö6D0;0 ṂṂ Ł Q ǰ PRV ʃ Ƿ̃ Ẕ ˥

N-Channel Enhancement Mode Field Effect Transistor in a PDFN3Ö3A-8L Plastic Package.

## / Features

$V_{DS}$ (V) = 30V

$I_D$ =74A ($V_{GS}$ = ¤ 20V)

$R_{DS(ON)}$@10V Ů 3.7mR(Typ.3.5mR)

$R_{DS(ON)}$@4.5V Ů 6.5mR(Typ.4.5mR)

˥ ᵀ DHF0T434 ‰´ ᴊ ˡ ˎ ớ ɭ ∂ ı ŋ̀ ƒ ᵝ Â Qualified to AEC-Q101 Standards for High Reliability, HF Product.

## / Applications

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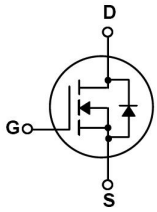
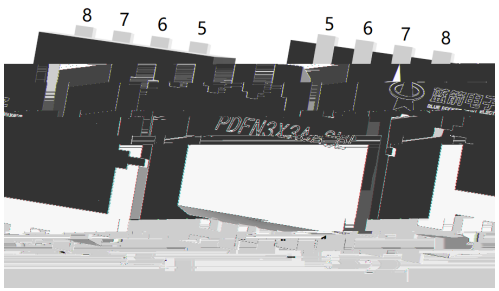
Load Switch Applications,Battery Power Management, Meet the stringent requirements of automotive applications.

## / Equivalent Circuit




## / Pinning




| 出脚 | 定义 |
|---|---|
| Pin1 | S |
| Pin2 | S |
| [illegible] | S |
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## / Marking

ð M ˥ ب ˝

See Marking Instructions.

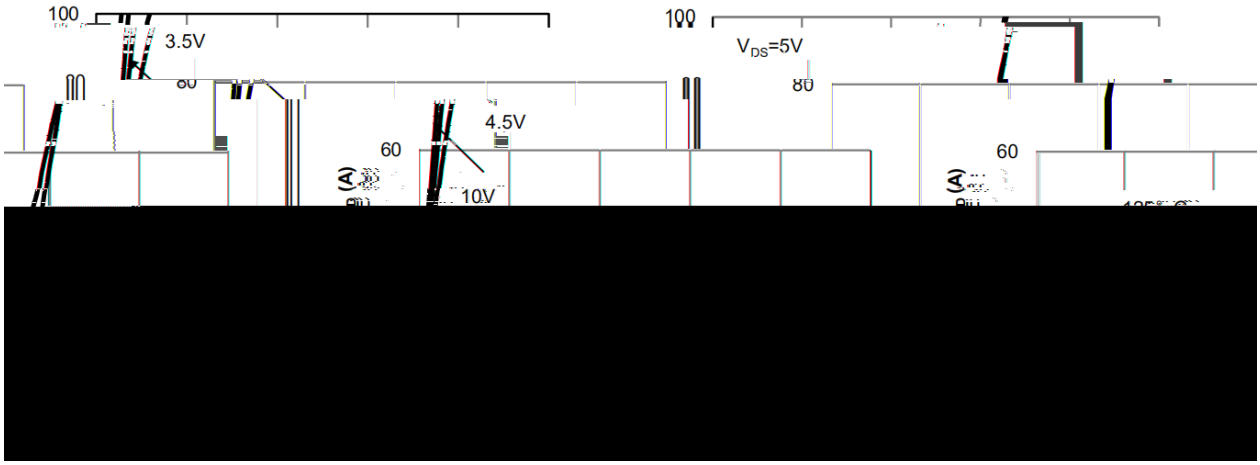
## / Absolute Maximum Ratings(Ta=25 )

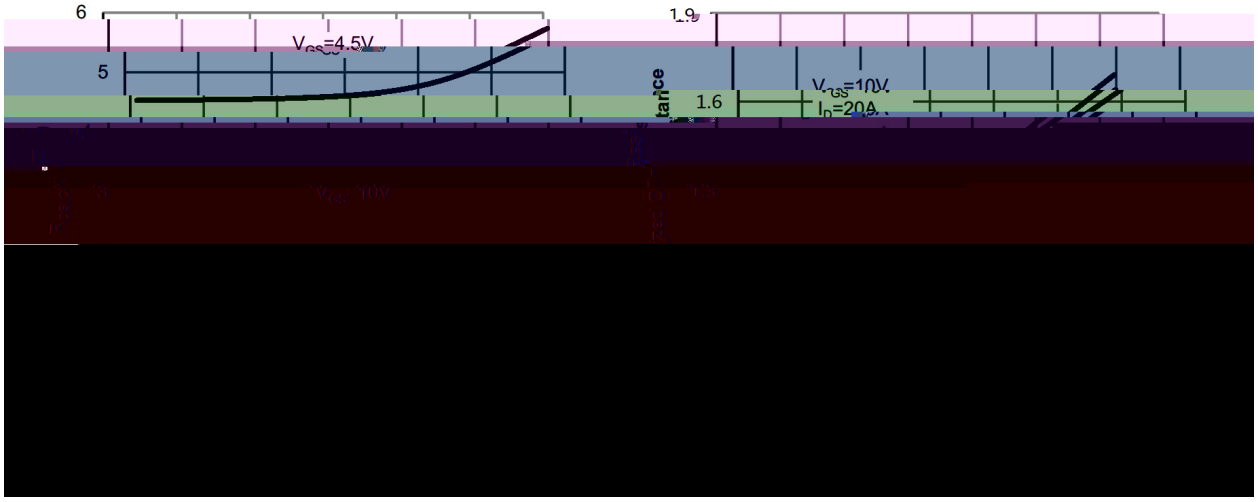
| v ̈Ω̣<br>Parameter | | ϒ N<br>Symbol | ̈Ω̣Ö<br>Rating | D Ḫ<br>Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 30 | V |
| Drain Current | | $I_D$(Tc=25Ņ) | 74 | A |
| Drain Current - Pulsed | | $I_{DM}$ | 185 | A |
| Gate-Source Voltage | | $V_{GSS}$ | ±20 | V |
| Single Pulsed Avalanche Energy | | $E_{AS}$ | 449 | mJ |
| Avalanche Current | | $I_{AS}$ | 33.5 | A |
| Power Dissipation | | $P_D$(Tc=25Ņ) | 35 | W |
| Operating and Storage Temperature Range | | $T_J$,$T_{stg}$ | -55 to 150 | |
| Junction-to-Ambient | tŮ10 | $R_{\theta JA}$ | 42 | Ņ/W |
| Junction-to-Ambient | Steady-State | | 78 | |
| Junction-to-Case | Steady-State | $R_{\theta JC}$ | 3.6 | |

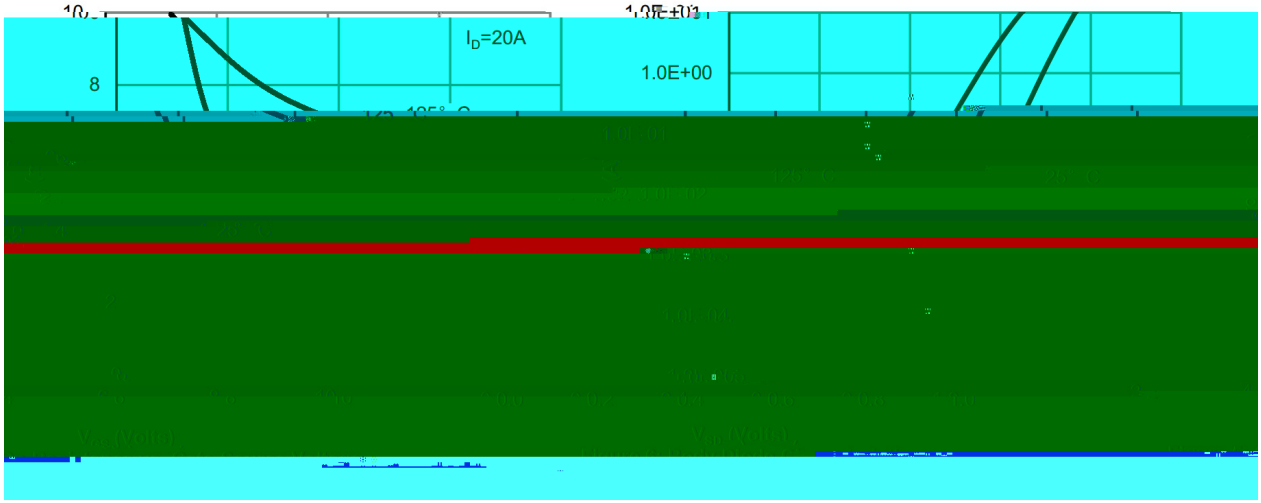
## / Electrical Characteristics(Ta=25 )

| v Ω<br>Parameter | ϒ N<br>Symbol | ⅄ ; ϒ ϒ<br>Test Conditions | ω ɳ Ө<br>Min | Ɛ ʒ Ө<br>Typ | ω ᶻ Ө<br>Max | ɒ ɥ<br>Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250μA | 30 | 35 | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=30V $V_{GS}$=0V | | | 1 | μA |
| Gate-Body Leakage Current Forward | $I_{GSS}$ | $V_{GS}$=±20V $V_{DS}$=0V | | | ±0.1 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$ $I_D$=250μA | 1.0 | 1.5 | 3.0 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=10V $I_D$=20A | | 3.5 | 3.7 | mΩ |
| | | $V_{GS}$=4.5V $I_D$=10A | | 4.5 | 6.5 | mΩ |
| Drain-Source Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V $I_S$=1A | | | 1.2 | V |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=25V $V_{GS}$=0V f=1.0MHz | | 2750 | | pF |
| Output Capacitance | $C_{oss}$ | | | 380 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 240 | | |
| Gate resistance | $R_g$ | $V_{GS}$=0V $V_{DS}$=0V f=1MHz | | 2.6 | | Ω |
| Total Gate Charge | $Q_{g(10V)}$ | $V_{GS}$=10V $V_{DS}$=15V $I_D$=20A | | 80 | | nC |
| Total Gate Charge | $Q_{g(4.5V)}$ | | | 35 | | |
| Gate Source Charge | $Q_{gs}$ | | | 13 | | |
| Gate Drain Charge | $Q_{gd}$ | | | 13 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=10V $V_{DS}$=15V $R_L$=0.75Ω $R_{GEN}$=3.0Ω | | 6.7 | | ns |
| Turn-On Rise Time | $t_r$ | | | 3.8 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 32 | | |
| Turn-Off Fall Time | $t_f$ | | | 5.2 | | |

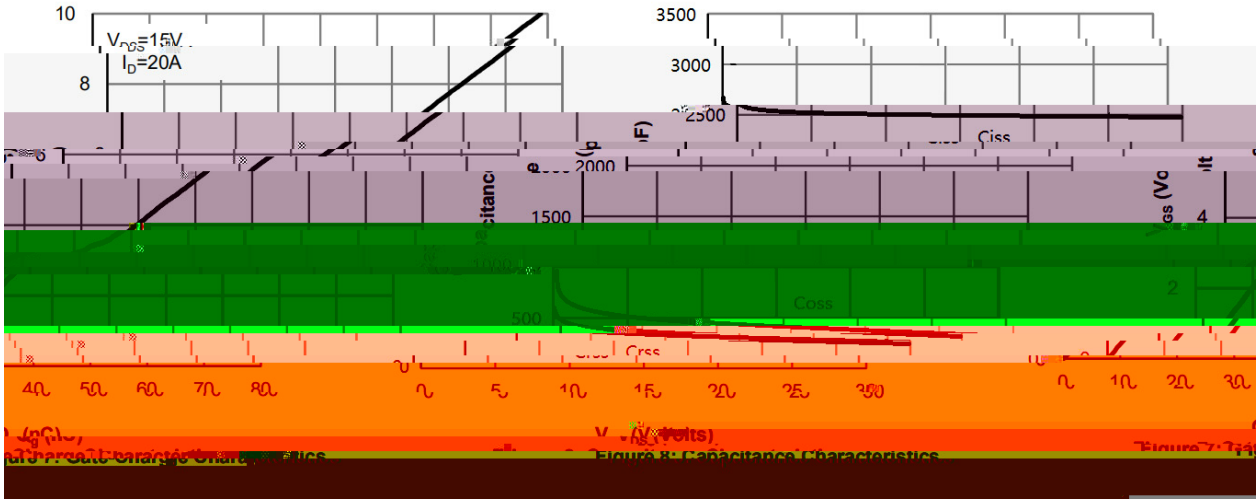
## / Electrical Characteristic Curve

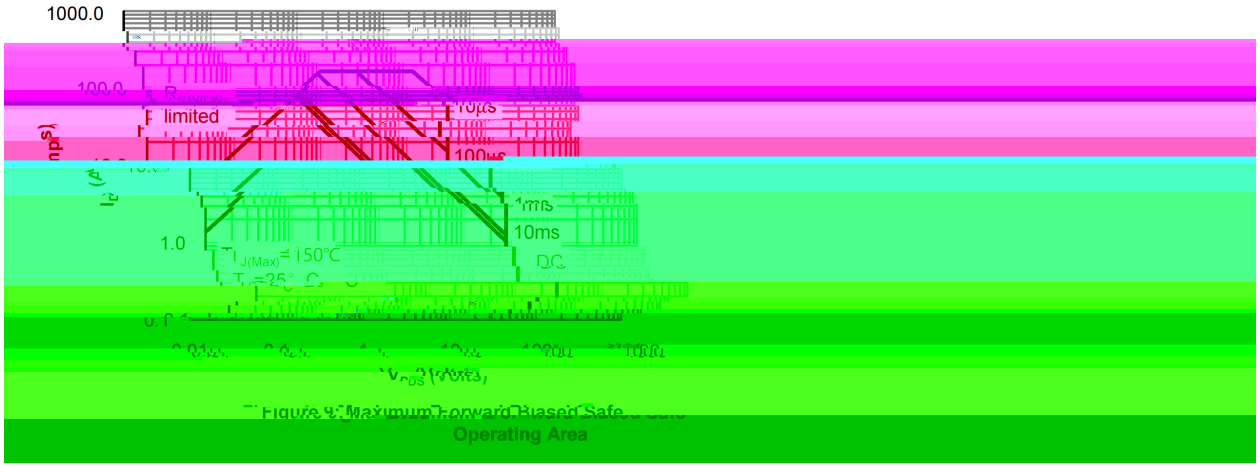


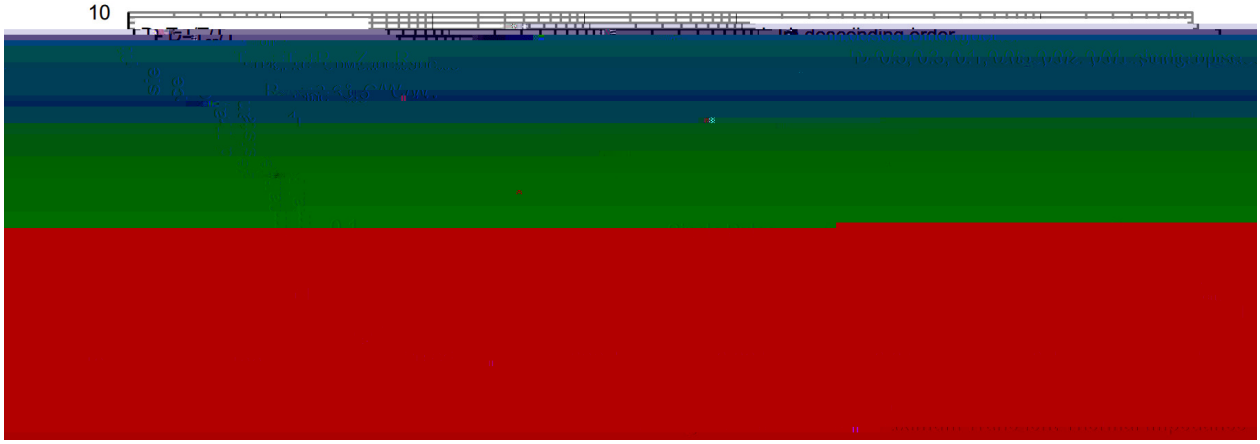



## / Electrical Characteristic Curve



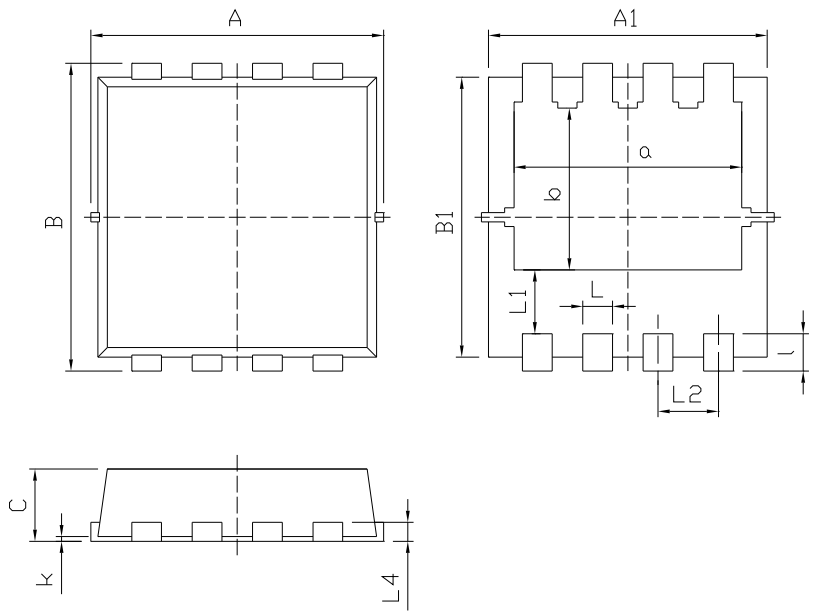



## / Package Dimensions

PDFN3X3A-8L

Unit:mm




| Dimensions In Millimeterer | | | |
|---|---|---|---|
| Symbol | MIN | TYP | MAX |
| A | 3.20 | 3.30 | 3.40 |
| A1 | 3.10 | 3.15 | 3.20 |
| B | 3.20 | 3.30 | 3.40 |
| B1 | 2.95 | 3.00 | 3.05 |
| C | 0.75 | 0.80 | 0.85 |
| L | 0.25 | 0.30 | 0.35 |
| L1 | - | - | 0.75 |
| L2 | 0.55 | 0.65 | 0.75 |
| L4 | 0.14 | 0.15 | 0.20 |
| a | 2.35 | 2.45 | 2.55 |
| b | 1.635 | 1.735 | 1.835 |
| k | 0.00 | - | 0.05 |
| l | 0.30 | 0.40 | 0.50 |

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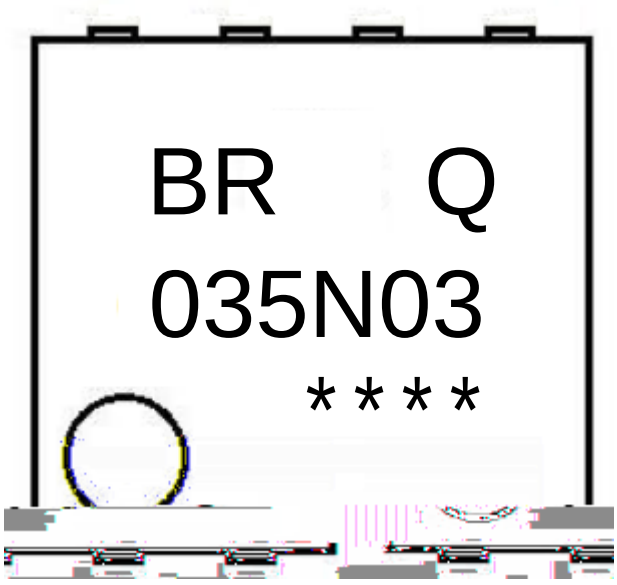
## / Marking Instructions

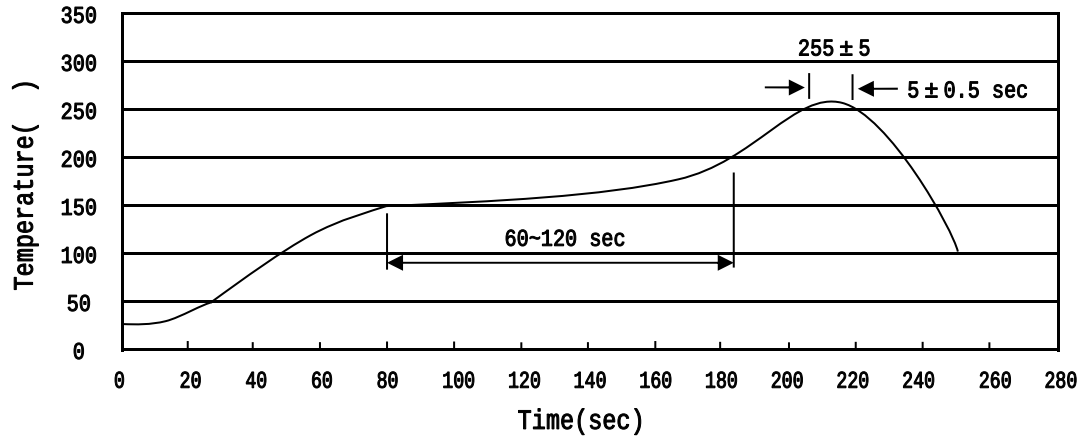



| | |
|---|---|
| ب ˝ χ | |
| BR χ | ⌘ ⅋ ᴵᴵ ⊓ |
| Q χ | ⌘ ∩ ⊂ ⍞ ⍞ ᵝ ‰ ⍱ |
| 035N03 χ | ⌘ ⅋ ᴺ ⊓ |
| ---- χ | ⌘ ⊣ ⍞ ⍞ ᴺ ⊓ ⍞ ⊣ ⍞ ⍞ ᴺ ⍱ ⍞ |

Note:

| | |
|---|---|
| BR: | Company Code |
| Q: | Automobile halogen-free product Code |
| 035N03: | Product Type Code |
| ****: | Lot No. Code, code change with Lot No |

## ( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)




ب ˝ χ

1 ǂ ♬ □ ỷ 150 Ḱ 200 ɬ ı `H ڑ 60 Ḱ 120sec;

2 Š Ö □ ỷ 255°5 ɬ ı `H ڑ ˙Y ⺈ ⺾ 5°0.5sec;

3 ì ˙ ⺈ ˛ ɔ ⺾ ỷ ⺾ 2 Ḱ 10 ɬ /sec.

Note:

1.Preheating:150~200 ɬ , Time:60~120sec.

2.Peak Temp.:255°5 ɬ , Duration:5°0.5sec.

3. Cooling Speed: 2~10 ɬ /sec.

## / Resistance to Soldering Heat Test Conditions

□ ỷ χ 260°5 ɬ `H ڑ χ 10°1 sec. Temp.:260°5 ɬ Time:10°1 sec

## / Packaging SPEC.

ɔ` γ ⊢ / REEL

| Package Type | Units | | | | | Dimension (unit mm³) | | |
|---|---|---|---|---|---|---|---|---|
| | Units/Reel / | Reels/Inner Box / | Units/Inner Box / | Inner Boxes/Outer Box / | Units/Outer Box / | Reel | Inner Box | Outer Box |
| PDFN3×3A-8L | 5,000 | 2 | 10,000 | 6 | 60,000 | 13 ρ ×12 | 360×360×50 | 380×335×366 |

## / Notices